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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/565,390

01/23/2006

Ken'ichi Kasazumi

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EXAMINER

FANG, JERRY C

ART UNIT

PAPER NUMBER

2873

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/03/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/565,390

Applicant(s)

KASAZUMI ET AL.

Examiner

Jerry Fang

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) 10-14, 17, 20 and 23-35 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 8 and 9 is/are allowed.
- 6) ☒ Claim(s) 2, 4, 6, 15, 16, 18, 19, 21 and 22 is/are rejected.
- 7) ☒ Claim(s) 3, 5 and 7 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/22/2006 and 11/13/2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of claims 1-9, 15-16, 18-19, and 21-22 in the reply filed on 11/13/2006 is acknowledged. The traversal is on the ground(s) that the search of the distinct species wouldn't place a serious burden on the examiner. This is not found persuasive because the search of distinct species requires extensive search in different area, thus place a serious burden on the examiner.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2, 4, 15, 16, 18, and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Kruschwitz et al. (US 2003/0039036).

Regarding claim 2, Kruschwitz discloses a coherent light source (Fig. 1, 20); a diffuser for diffusing light (Fig. 1, 34); an illumination optical system for irradiating the diffuser with light emitted from the coherent light source (Fig. 1, 26); a spatial light modulator disposed near the diffuser, said modulator modulating the light that is emitted from the coherent light source and diffused by the diffuser (Fig. 1, 24); and a projector

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lens for projecting an image which is obtained by light modulation by the spatial light modulator, on a certain plane in space (Fig. 1, 58); wherein a diffusion angle of the diffuser is determined on the basis of a substantial numerical aperture of the illumination optical system, a brightness of the projector lens (Para. 0040-0041).

Regarding claim 4, Kruschwitz discloses a coherent light source (Fig. 1, 20); a diffuser for diffusing light (Fig. 1, 34); an illumination optical system for irradiating the diffuser with light emitted from the coherent light source (Fig. 1, 26); a spatial light modulator disposed near the diffuser, said modulator modulating the light that is emitted from the coherent light source and diffused by the diffuser (Fig. 1, 24); and a projector lens for projecting an image which is obtained by light modulation by the spatial light modulator, on a certain plane in space (Fig. 1, 58); wherein the spatial light modulator and the diffuser are separated from each other by a distance that is determined on the basis of a diffusion angle of the diffuser, a substantial numerical aperture of the illumination optical system, and a screen size of the spatial light modulator in a diagonal direction (Para. 0040-0041).

Regarding claims 15 and 18, Kruschwitz discloses wherein said illumination optical system includes a light integrator (Fig. 1, 40).

Regarding claims 16 and 19, Kruschwitz discloses wherein said light integrator comprises at least two lens arrays (Para. 0026).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6, 21, and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Kruschwitz et al. (US 2003/0039036) in view of Kubota et al. (US 5,807,440).

Regarding claim 6, Kruschwitz discloses a coherent light source (Fig. 1, 20); a diffuser for diffusing light (Fig. 1, 34); an illumination optical system for irradiating the diffuser with light emitted from the coherent light source (Fig. 1, 26); a spatial light modulator disposed near the diffuser, said modulator modulating the light that is emitted from the coherent light source and diffused by the diffuser (Fig. 1, 24); and a projector lens for projecting an image which is obtained by light modulation by the spatial light modulator, on a certain plane in space (Fig. 1, 58); wherein the spatial light modulator and the diffuser are separated from each other by a distance that is determined on the basis of a substantial numerical aperture of the illumination optical system (Para. 0040-0041). Kruschwitz fails to disclose wherein the spatial light modulator and the diffuser are separated from each other by a distance that is determined on the basis of a pitch of unevenness in the transmissivity of the diffuser. Kubota discloses wherein the spatial light modulator and the diffuser are separated from each other by a distance that is

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determined on the basis of a pitch of unevenness in the transmissivity of the diffuser (Col. 3, Lines 49-53). It would have been obvious to one of ordinary skill in the art at the time the invention was made to determine the separation distance between a spatial light modulator and a diffuser based on a pitch of unevenness in the transmissivity of a diffuser as taught by Kubota, with the optical device of Kruschwitz, since as shown by Kubota, the separation distance between a spatial light modulator and a diffuser is commonly determined based on the unevenness in the transmissivity of a diffuser.

Regarding claim 21, Kruschwitz discloses wherein said illumination optical system includes a light integrator (Fig. 1, 40).

Regarding claim 22, Kruschwitz discloses wherein said light integrator comprises at least two lens arrays (Para. 0026).

Allowable Subject Matter

Claims 3, 5, and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The allowable features being: $\theta/2 + \sin^{-1}(NA_{in}) < 2 \cdot \tan^{-1}(1/2f)$ (claim 3); $(\theta/2 + \sin^{-1}(NA_{in})) \cdot L < D/3$ (claim 5); and $L \cdot NA_{in} > P$ (claim 7).

Claims 1, 8, and 9 are allowed.

The following is an examiner's statement of reasons for allowance: The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of the independent claim, in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper. The prior art fails to teach a combination of all the claimed features as presented in independent claim 1, with the allowable features being: $V > d \cdot 30$ (millimeters/sec) (claim 1). Therefore, claims 1, 8, and 9 are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Fang whose telephone number is 5712726013. The examiner can normally be reached on 10-8.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 5712722333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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J.F.

12/20/2006

A handwritten signature in black ink, appearing to read "Tim Thompson". The signature is fluid and cursive, with the first name "Tim" and last name "Thompson" clearly distinguishable.

**TIMOTHY THOMPSON
PRIMARY EXAMINER**